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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/825,438	04/16/2004	Jong-Jin Park	8733.1023.00-US	8011

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EXAMINER
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DUDEK, JAMES A

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 01/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/825,438

Applicant(s)

PARK ET AL.

Examiner

James A. Dudek

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on 11/2/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 22-41 is/are rejected.
- 7) ☒ Claim(s) 21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-13, 15-16, 18-20, 22-24 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's related art ("ARA") in view of 20050018108 ("108").

Per claim 1-3, 5-7, ARA figure 2A and 3 teach an in-plane switching mode liquid crystal display device, comprising: a plurality of R (Red), G (Green) and B (Blue) pixels defined by a plurality of gate lines and a plurality of data lines [3 note bent portion]; a driving element in the pixel [19]; and at least one pair of electrodes disposed in the pixel to form a horizontal electric field [5,7], wherein the R, G, and B pixels are arranged in a zigzag pattern in a data line direction, and each of R, G, and B pixels is arranged to be symmetric with respect to the gate line to adjacent R, G, and B pixels. ARA lacks dedicated white subpixels. However, it was well known or conventional to use dedicated white pixels as 108 teaches it was conventional [see paragraph 0016]. Furthermore it was well to produce white without the need for complex driving multiple subpixels. Accordingly, it would have been obvious to one of ordinary skill at the time of invention to combine ARA with 108.

Claim 8 adds to claim 1, the R, G, B, and W subpixels are arranged in a zigzag pattern in a data line direction, the subpixels of adjacent pixels being arranged in a different direction to

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compensate a main viewing angle of each of R, G, B, W subpixels [the ARA teaches this limitation in figure 3].

Claim 10 is completely encompassed by claim 1 and therefore claim 10 is addressed by addressing claim 1.

Per claim 4, ARA teaches the device of claim 3, wherein the common electrode and the pixel electrode have at least one bent portion [see branches extending from horizontal bus regions of the pixel and common electrodes].

Per claim 9, ARA teaches the device of claim 8, wherein direction of the electrodes in each of R, G, B, and W subpixels is symmetric to that of the electrodes in adjacent R, G, B, and W subpixels with respect to the gate line [see figure 3].

Per claim 11, ARA teaches the in-plane switching mode liquid crystal display device 10, wherein the white pixel of the first set and the white pixel of the second set are not adjacent to each other [figure three clearly shows R, G and B sequence and adding a W pixel would add another element to the sequence but the sequence would only be altered to accommodate the white pixel].

Per claim 12, ARA the in-plane switching mode liquid crystal display device of claim 10, wherein the first set of pixels includes four pixels and the second set of pixels includes four pixels [the added white would make four].

Per claims 13 and 24, ARA teaches the in-plane switching mode liquid crystal display device of claim 12, wherein the first set of four pixels and the second set of four pixels are each arranged in a two by two matrix [first 2x2 matrix is R and G, the second 2x2 matrix is B and W].

Per claim 29, ARA in view of 108 teaches an in-plane switching mode liquid crystal display device, comprising: a first set of pixels of different colors, each of the pixels having a data line along a side thereof and a gate line along a side thereof, wherein one of the pixels is a white (W) pixel [first set is the top B and W]; a second set of pixels of different colors, each of the pixels having a data line along a side thereof and a gate line along a side thereof, wherein one of the pixels is a white (W) pixel [top R and W but must use every other W as W is shared with B]; a third set of pixels of different colors, each of the pixels having a data line along a side thereof and a gate line along a side thereof, wherein one of the pixels is a white (W) pixel

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[bottom B and W]; and a fourth set of pixels of different colors, each of the pixels having a data line along a side thereof and a gate line along a side thereof, wherein one of the pixels is a white (W) pixel [bottom R and W]; wherein the first set of pixels and the second set of pixels are adjacent to each other and the third set of pixels and the fourth set of pixels are adjacent to each other and wherein the white pixels are not adjacent to each other [there is a G pixel in between but they are still adjacent].

Claims 14, 17, 25-28, 30-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's related art ("ARA") in view of 20050018108 ("108") as applied to claims 1-13, 15-16, 18-20, 22-24 and 29 above and further in view of US 5777707 A, US 5757452 A; US 5642176 A, US 5142392 A and US 6707067 B2.

Per claims 14 and 17, ARA in view of 108 teaches the in-plane switching mode liquid crystal display device 13, but lacks the white pixel of the first set and the white pixel of the second set are not adjacent to each other. However this color filter layout was well known as evidence by 707, 452, 176, 392 and 067. Accordingly, it would have been obvious to one of ordinary skill at the time of invention to combine ARA in view of 108 with common knowledge in order to improve the color gamut of the cell.

Per claim 25, ARA in view of 108 teaches the in-plane switching liquid crystal display device of claim 24, but lacks the two by two matrices of the first set and the second set include an upper row and a lower row, respectively, and wherein the two colors in the upper row of the first set are the same as the two colors in the lower row of the second set. However this color filter layout was well known as evidence by 707, 452, 176, 392 and 067. Accordingly, it would have been obvious to one of ordinary skill at the time of invention to combine ARA in view of 108 with common knowledge in order to improve the color gamut of the cell.

Per claim 26, ARA in view of 108 teaches the in-plane switching liquid crystal display device of claim 25, but lacks the two colors in the upper row of the first set are arranged the same as the two colors in the lower row of the second set. However this color filter layout was well known as evidence by 707, 452, 176, 392 and 067. Accordingly, it would have been obvious to one of ordinary skill at the time of invention to combine ARA in view of 108 with common knowledge in order to improve the color gamut of the cell.

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Per claim 27, ARA in view of 108 teaches the in-plane switching liquid crystal display device of claim 13, but lacks the two by two matrices of the first set and the second set include an upper row and a lower row, respectively, and wherein the two colors in the lower row of the first set are the same as the two colors in the upper row of the second set. However this color filter layout was well known as evidence by 707, 452, 176, 392 and 067. Accordingly, it would have been obvious to one of ordinary skill at the time of invention to combine ARA in view of 108 with common knowledge in order to improve the color gamut of the cell.

Per claim 28, ARA in view of 108 teaches the in-plane switching liquid crystal display device of claim 27, but lacks the two colors in the lower row of the first set are arranged in the same pattern as the two colors in the upper row of the second set. However this color filter layout was well known as evidence by 707, 452, 176, 392 and 067. Accordingly, it would have been obvious to one of ordinary skill at the time of invention to combine ARA in view of 108 with common knowledge in order to improve the color gamut of the cell.

Per claims 30-42, ARA in view of 108 teaches the in-plane switching liquid crystal display device of claim 29, but lacks the first set of pixels includes four pixels, the second set of pixels includes four pixels, the third set of pixels includes four pixels, and the fourth set of pixels includes four pixels and wherein the first to fourth sets of four pixels are each arranged in a two by two matrix. However this color filter layout was well known as evidence by 707, 452, 176, 392 and 067. Accordingly, it would have been obvious to one of ordinary skill at the time of invention to combine ARA in view of 108 with common knowledge in order to improve the color gamut of the cell.

#### ***Allowable Subject Matter***

Claim 21 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record lacks a dead space formed between the first set and the second set.

***Response to Arguments***

Applicant's arguments filed 11/2/05 have been fully considered but they are not persuasive.

Applicant's first argument addresses claims 1-7. Applicant argues that ARA and Okumura fail to teach a symmetric pixel arrangement with respect to the gate line. Figures 2A of Applicant's related art shows the gate line 2 located between the pixels electrodes 9. Figure 3 shows a red pixel above and below the gate line, a green pixel above and below the gate line and a blue pixel above and below the gate line. Thus, figure 3 shows the red, blue and green pixels are symmetric with respect to the gate line. Lacking, as stated in the rejection, is a white pixel. However, adding white pixels is conventional and as the related art uses a linear subpixel arrangement, the white pixel would have been added to the pixel immediately after the blue pixel just like the primary reference as the primary is being modified only to add a white pixel. That is, the linear pixel arrangement was taught by the primary reference. As to these claims, Applicant fails to persuade the Examiner.

Applicant's second argument addresses claims 8-9. Applicant argues that ARA and Okumura fail to teach a zigzag pixel arrangement in a data line direction. The data line direction is the vertical direction [see figure 2A and data lines 3.] Figures 2A and 3 show the top of the pixels below gate line 2 tilted to the left and pixels at the bottom of the pixel above the gate line tilted left or a zigzag configuration in the vertical direction. Thus the primary reference lacks only the white pixel. Adding a white pixel to the primary reference was conventional and would merely alter the primary reference by adding a white pixel after the blue pixel. As to these claims, Applicant fails to persuade the Examiner.

Applicant's third argument addresses claims 10-28. Applicant argues that ARA and Okumura fail to teach a first set of pixels of different colors, each of the pixels having a data line along a side thereof and a gate-line along a side thereof, wherein one of the pixels is white, each pixel of the first set of pixels having at least one pair of first electrode for providing for providing a horizontal electric field therebetween; and a second set of pixels of a different colors, each of the pixels having a data line along a side thereof and a gate line along a side thereof, wherein on of the pixels is a white pixel, each pixel of the second set of pixels having at least one pair of first electrodes for providing a horizontal electric field therebetween. Once again ARA in view of

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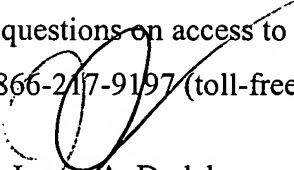
108 teaches these limitations but lack only the white pixel. Specifically, the first set of pixels would be the blue subpixel and white subpixel of the first pixel. Figure 2A shows a pair of electrode 7 and 9. The second set would be the subpixels of the second pixel in the matrix. That is, the blue subpixel and white subpixel of the second pixel make up the second set.

Applicant's last argument addresses claims 29-42. Examiner inadvertently failed to address claim 42. Applicant is merely claiming a specific subpixel pattern and this pattern was well known as evidence by the cited references. Accordingly, the rejection of claim 42 is included in the above rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Dudek whose telephone number is 571-272-2290. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



James A. Dudek  
Primary Examiner  
Art Unit 2871